

CLAIMS

1. Method of operating a production plant comprising at least one unit (3) for treating at least one gas
5 mixture, said unit delivering at least one fluid to a consumer (2) and being supplied with electricity, in which method:

- the treatment unit is operated during periods in which the cost of electricity is above a first
10 predefined threshold and during periods in which the cost of electricity is below a second predefined threshold, the first threshold being greater than or equal to the second threshold;

- during at least one period in which the cost of
15 electricity is below the second threshold, at least one portion of one of the at least one fluid is stored, in liquid and/or gaseous form, in at least one storage tank (9);

- during at least one period in which the cost of
20 electricity is above the first threshold, one of the at least one fluid is delivered to the consumer at least partly from the storage tank after a vaporization step if it is stored in liquid form; and

- during at least one period in which the cost of
25 electricity is below the second threshold, at least one fluid is produced, in a line of the treatment unit, with a predefined purity, a predefined flow rate, a predefined temperature and a predefined pressure in the treatment unit;

30 characterized in that, during at least one period in which the cost of electricity is above the first threshold, the power consumption of the treatment unit is reduced, relative to the power consumption of the treatment unit when the cost of electricity is below
35 the second threshold, and all or a portion of the fluid having a predefined purity, a predefined flow rate, a predefined temperature and a predefined pressure is produced in the line of the treatment unit with a purity below the predefined purity and/or a flow rate

below the predefined flow rate and/or a temperature below the predefined temperature and/or a pressure below the predefined pressure and is sent elsewhere than to a consumer, possibly being at least partly
5 vented.

2. Method according to Claim 1, in which the treatment unit (3) is an air separation apparatus that produces at least one stream enriched with gaseous
10 oxygen and/or at least one stream enriched with gaseous nitrogen and/or at least one stream enriched with argon and/or at least one stream enriched with liquid oxygen and/or at least one stream enriched with liquid nitrogen and/or at least one stream enriched with
15 liquid argon as final product(s).

3. Method according to Claim 1 or 2, in which, during a period in which the cost of electricity is above the first threshold, the total power consumption of the
20 treatment unit is reduced by at least 25%, preferably by at least 50%, relative to the power consumption of the treatment unit operating when the cost of electricity is below the second threshold.

25 4. Method according to one of the preceding claims, in which during at least one period in which the cost of electricity is above the first threshold, at least one product of the treatment unit is at least partly produced with approximately the same purity and with
30 i) either a reduced flow rate relative to the flow rate at which it is produced, during at least one period in which the cost of electricity is below the second threshold;

 ii) or approximately the same flow rate as that at
35 which is produced, during at least one period in which the cost of electricity is below the second threshold.

5. Method according to Claims 2 to 4, in which at least one of the products of the treatment unit (3)

that is produced with approximately the same purity as that at which it is produced during at least one period in which the cost of electricity is below the second threshold is a nitrogen-enriched stream and/or an argon-enriched stream.

6. Method according to one of the preceding claims, in which the treatment unit (3) treats at least one gas mixture throughout the periods in which the cost of electricity is above the first threshold.

7. Method according to Claim 6, in which a compressor (1, 15) forming part of the treatment unit compresses a gas mixture intended for or coming from the treatment unit and when the cost of electricity is above the first threshold, the compressor operates with reduced load, at least one portion of the compressed gas mixture being vented to atmosphere.

8. Method according to one of the preceding claims, in which less liquid is produced when the cost of electricity is above the first threshold than when the cost of electricity is below the second threshold, or no liquid is produced when the cost of electricity is above the first threshold.

9. Method according to one of the preceding claims, in which the fluid sent to the storage tank is of approximately constant purity.

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10. Production plant, comprising:

- i) at least one unit (3) for treating at least one gas mixture, delivering at least one fluid to a consumer (2) and supplied with electricity;
- 35 ii) means for making the treatment unit operate during periods in which the cost of electricity is above a first predefined threshold and during periods in which the cost of electricity is below a second

predefined threshold, the first threshold being greater than or equal to the second threshold;

iii) at least one storage tank (9, 12) and means for storing at least one portion of the fluid, in liquid and/or gaseous form, in the storage tank during at least one period in which the cost of electricity is below the second threshold;

iv) means for delivering the fluid to the consumer from the storage tank, after a vaporization step if it is stored in liquid form, during at least one period in which the cost of electricity is above the first threshold; and

v) means for producing, via a line of the treatment unit, at least one fluid having a predefined purity, a predefined flow rate, a predefined temperature and a predefined pressure in the treatment unit during at least one period in which the cost of electricity is below the second threshold;

characterized in that it comprises means for producing the fluid via the line with a purity below the predefined purity and/or a flow rate below the predefined flow rate and/or a temperature below the predefined temperature and/or a pressure below the predefined pressure, means for operating the treatment unit in such a way that, during at least one period in which the cost of electricity is above the first threshold, the power consumption of the treatment unit is reduced relative to the power consumption of the treatment unit during the period in which the cost of electricity is below the second threshold, and means (21) for sending the fluid produced and/or at least one portion of the gas mixture, particularly air, other than to the consumer, during this period in which the cost of electricity is above the first threshold, preferably only during this period in which the cost of electricity is above the first threshold.

11. Plant according to Claim 10, which comprises a compressor (1, 15) for compressing a gas mixture

intended for or coming from the treatment unit, means for sending the compressed gas mixture to the treatment unit and means (17, 19) for venting the compressed gas mixture.

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12. Plant according to Claim 10 or 11, which comprises means for delivering the fluid to the consumer from at least one storage tank (9), after a vaporization step if it is stored in liquid form, only during at least
10 one period in which the cost of electricity is above the first threshold.